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For the Patent- and Registration Office


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Avgift
Fee

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Improvements in or relating to group calls.

The present invention relates to a telecommunication service applied in user equipment operating in a telecommunication network which allow group calls between different members in a defined group within said telecommunication network and where said service uses a special service depended infrastructure.

A service called Instant-Push-to-talk-over-Cellular (PoC) will be applied in handsets for GSM, EDGE, UMTS and CDMA systems in a near future and also in third generation mobile system.

Traditionally PoC is seen as an enhanced "walkie-talkie" in a cellular telecommunication system. Supporting only voice communications.

PoC enabled handsets will most likely be equipped with a PoC-button. When this button is pressed the handset connects you directly to a friend, a family member or even a whole group of people of your choice.

Like a "walkie-talkie" the voice communication in the PoC service is half-duplex, this means that media can only be sent when the handset is not receiving media. It is the infrastructure of PoC that make sure that the service is half-duplex by rejecting other to send while receiving media. One of the main reasons why half-duplex communications is preferred in PoC, is that the speech from one user can easily be multiplied by the infrastructure and sent to many users in

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a group (enable group communication) without the need of an expensive teleconferencing system that performs trans-coding.

5 Future evolutions of PoC will be true multimedia services in which voice, images, text and video may be sent. For instance, instant messaging is a candidate to be included in the next PoC standard. And when mixing medias, like text, images and speech the service may not have to be a strictly half-duplex service anymore.

10

No meeting chair functionality or prioritizing between media types exists today in the PoC infrastructure.

15 The PoC infrastructure controls which user that has the right to speak through a request/response mechanism here called floor control, in which the user that wishes to speak have to request the right to speak and wait for the response that either grants or denies the request. The floor is granted only for talk burst on a first received basis, no queuing of floor control messages is performed.

20

25 Users involved in a PoC session, either one of the services that involves several users as in a group talk or only two users as in a personal PoC call, may want to communicate to the other users by either voice, text, images or through a video clip.

30 One problem is that users perceive the media types differently in a delay perspective. For instance, users in a voice communication are more delay sensitive than users using a messaging service. Therefore, it would be unfortunate if a



large text message delayed voice frames in the mentioned multimedia PoC case.

The floor control of PoC today, is also strictly half-duplex this means that a UE cannot send any media while receiving media. This makes sense for strictly voice communications, but if someone is in the process of start sending a large image, this action should not block the voice traffic for the session.

Thus, this invention suggests a service enhancement in a PoC server in which queuing of PoC floor control messages and media is allowed and different media types are given different prioritizing in the queue.

According to a one aspect of the present invention is provided a telecommunication service applied in user equipment operating in a telecommunication network which allow group calls between different members in a defined group within said telecommunication network and where said service uses a special service depended infrastructure

- in that that said service interact with said depended infrastructure which includes chair functionality or prioritizing between different media types.
- in that said service use a mechanism to request and grant the right to transmit media and is independent of the application and transport protocols used for that purpose.
- in that said service dependent infrastructure includes a PoC server in which queuing of PoC floor control messages and media is allowed and different media types are given different prioritizing in the queue.

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5 - in that said messages includes media identifying fields
in the appropriate floor control messages and allow for
queuing of the floor control messages in the PoC
infrastructure and also allows for queuing of the floor
control messages in the handset and allow for media
buffering in the PoC server.

10 Advantages of the present invention are that it gives each
user the chance to make him/her heard, without any particular
user interaction (remember that floor handling could also
have been with only user interaction).

15 Another advantage is that the invention enables floor control
between different media types with different priorities and
delay requirements. This prevents the need for resource
separation and priority at the radio network. Instead the
separation, priority and queuing is handled in the
infrastructure with an extended floor control mechanism.

20 Embodiments of the invention will now be described, by way of
example, with reference to the accompanying drawings, in
which:

25 Figure 1: Illustrating a group communication scenario
according to the invention involving voice and images in a
first step.

Figure 2: Illustrating a group communication scenario
according to the invention involving voice and images in a
second step.

30 Figure 3: Illustrating a group communication scenario
according to the invention involving voice and images in a
third step.

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5 A glossary of the abbreviations used in this patent specification is set out below to facilitate an understanding of the present invention.

UTRAN	-	Universal Terrestrial Radio Access Network
PoC	-	Instant-Push-to-talk-over-Cellular
10 CDMA	-	Code division Multiple access
GSM	-	Group System Mobile
15 UE	-	User Equipment

20 The invention applies to all Push-to-talk related solutions that use a mechanism to request and grant the right to transmit media and is independent of the application and transport protocols used for that purpose.

In such solution, different floor control messages are sent from and to the PoC server in order to Request/Grant/Deny/Release the floor or inform that the floor is Taken/Idle.

25 The main idea is to:

- Include media identifying fields in the appropriate floor control messages to:
 - Defines which media type the floor control message belongs to.

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This enables the PoC infrastructure to choose voice communication over instant messaging in a race condition when to floor control messages carrying different media types is received almost simultaneously.

- o Include the size of the coming message if available (possible for pre-stored images, typed text messages)
- Allow for queuing of the floor control messages in the PoC infrastructure
 - o Terminal shall be able to send in a request to send media, for instance, an image at any point in time and this request shall not be dropped if the PoC infrastructure is currently receiving/transmitting media.
 - o Different types of requests may be treated differently. For instance, a request to transmit voice may be dropped if the PoC infrastructure is currently receiving/transmitting media but a request to send an image may not be dropped.
 - o Have a prioritizing mechanism in the queue that prioritize more delay sensitive media types, e.g.

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if requests to send voice is also stored such request should be prioritized over images. A prioritizing scheme should be done all allowed media types for the service.

5

- In the handset allow for generating and sending the floor control messages with the media identifying fields.
(the PoC client)

10

- o Then the UE may for instance upload non-delay sensitive medias (e.g. text, images) to the PoC server even during the time the UE receives for instance voice.

15

- Allow for media buffering in the PoC server

- o If a non-delay sensitive media is uploaded from the UE as described in the text above, the PoC infrastructure shall buffer it and transmit it when the PoC infrastructure has concluded that the previous media transmission is over and the floor is idle.

20

25

The example shows a group communication scenario involving voice and images.

Turning now to fig 1 which illustrates a PoC session in which Member B talks, Member C wants to provide the other members with an image containing some information. Hence, he pushes

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the PTT button and sends the image even though he is receiving voice.

In fig 2 is illustrated how the image is buffered in the PoC infrastructure while Member B continuous to talk.

5 Fig 3 illustrates that after the talk burst has ended the image is distributed to the members of the session.

While the invention has been described in connection with what is presently considered to be the most practical and preferred embodiment, it is to be understood that the invention is not to be limited to the disclosed embodiment, but on the contrary, is intended to cover various modifications and equivalent arrangements included within the spirit and scope of the appended claims.

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Claims

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1. A telecommunication service applied in user equipment operating in a telecommunication network which allow group calls between different members in a defined group within said telecommunication network and where said service uses a special service depended infrastructure, characterized in that that said service interact with said depended infrastructure which includes chair functionality or prioritizing between different media types.
2. A telecommunication service according to patent claim 1, characterized in that said service use a mechanism to request and grant the right to transmit media and is independent of the application and transport protocols used for that purpose.
3. A telecommunication service according to patent claim 2, characterized in that said service dependant infrastructure includes a PoC server in which queuing of PoC floor control messages and media is allowed and different media types are given different prioritizing in the queue.
4. A telecommunication service according to patent claim 2, characterized in that said messages includes media identifying fields in the appropriate floor control messages and allow for queuing of the floor control messages in the PoC infrastructure and also allows for queuing of the floor control messages in the handset and allow for media buffering in the PoC server.

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Abstract

A telecommunication service applied in user equipment operating in a telecommunication network which allow group calls between different members in a defined group within said telecommunication network and where said service uses a special service depended infrastructure. Said service interact with said depended infrastructure which includes chair functionality or prioritizing between different media types.

(fig 1)

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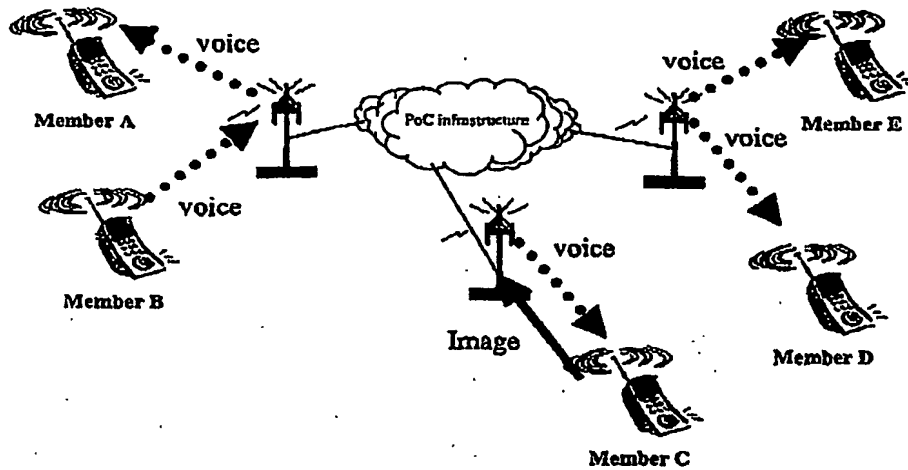
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Fig 1

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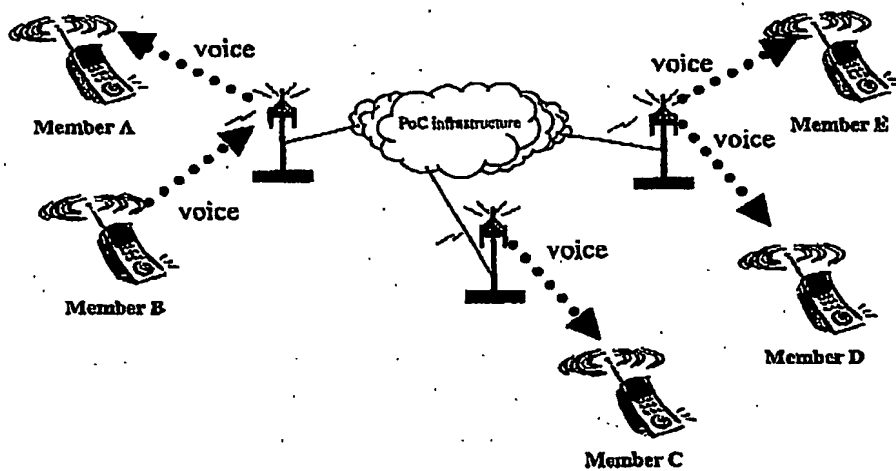
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Fig 2



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Fig 3

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